# United States Patent [19]

## Benzler

[11] **Patent Number:** **5,821,871**

[45] **Date of Patent:** **Oct. 13, 1998**

[54] **AUTHENTICATION METHOD**

[75] Inventor: **Hartwig Benzler, Feldkirchen, Germany**

[73] Assignee: **SC-Info+Inno Technologie Informationen+Innovationen GMBH CC, Germany**

[21] Appl. No.: **682,524**

[22] PCT Filed: **Jan. 19, 1995**

[86] PCT No.: **PCT/EP95/00178**

§ 371 Date: **Jun. 25, 1996**

§ 102(e) Date: **Jun. 25, 1996**

[87] PCT Pub. No.: **WO95/20802**

PCT Pub. Date: **Aug. 3, 1995**

[30] **Foreign Application Priority Data**

| Jan. 27, 1994 | [DE] | Germany | 44 02 430.4 |
|---|---|---|---|
| May 11, 1994 | [DE] | Germany | 44 16 665.6 |
| Jun. 7, 1994 | [DE] | Germany | 44 19 882.5 |
| Jul. 5, 1994 | [DE] | Germany | 44 23 415.5 |
| Aug. 26, 1994 | [DE] | Germany | 44 30 368.8 |
| Dec. 4, 1994 | [DE] | Germany | 44 43 039.6 |
| Oct. 11, 1995 | [DE] | Germany | 44 36 340.0 |

[51] Int. Cl.$^6$ ............................................... **G07D 7/00**

[52] U.S. Cl. .............................. **340/825.34; 340/825.31; 235/382**

[58] Field of Search ....................... 340/825.31, 825.34; 235/382, 382.5; 380/45

[56] **References Cited**

### U.S. PATENT DOCUMENTS

| 4,432,567 | 2/1984 | Stockburger et al. | ...................... 283/83 |
|---|---|---|---|
| 4,449,189 | 5/1984 | Feix et al. | ............................. 364/513.5 |
| 5,037,301 | 8/1991 | Michnick et al. | ...................... 433/229 |
| 5,109,427 | 4/1992 | Yang | ............................................ 382/4 |

(List continued on next page.)

### FOREIGN PATENT DOCUMENTS

A-0 006 419    1/1980    European Pat. Off. . .

B-0 007 002    1/1980    European Pat. Off. . .
B-0 029 894    6/1981    European Pat. Off. . .
A-0 034 755    9/1981    European Pat. Off. . .

(List continued on next page.)

### OTHER PUBLICATIONS

Smith, "Authenticating users by word association," Computers & Security, vol. 6, No. 6, 1987, Amsterdam, NL, pp. 464–470, XP 000050578.

Zviran, "Cognitive passwords: the key to easy access control," Computers & Security, vol. 9, No. 8, 1990, Amsterdam, NL, pp. 723–736, XP 000176620.

*Primary Examiner*—Brian Zimmerman
*Assistant Examiner*—Edward Merz
*Attorney, Agent, or Firm*—Fitch, Even, Tabin & Flannery

[57]     **ABSTRACT**

An authentifying method is revealed which uses as an identification feature images, tokens, texts or sounds which are based on individual knowledges and experiences of a person (PSPI) and which consist of a principal part and a complement or of associated notions, with that person performing the following steps with regard to a plurality of these PSPI: first register them within a memory and keep them inaccessible to other people, secondly make them visible or audible without the complement and in a sequence which other persons cannot foresee, thirdly restore them with the missing complement or verify them; or first subdivide them into their associated elements and assemble and register the latter ones within a plurality of element groups according to superordinated categories of these associated elements, whereby the elements may be accompanied by tokens like numbers or letters, secondly make them visible, audible or available in their subdivided form according to the groups, for the elements of one category in a determined sequence and for the elements of the other categories in a random sequence, thirdly and still in subdivided form, put them together into characteristic two-dimensional structures or linear chains, by means of connecting associated elements of the respective element groups and of connecting these reconstituted PSPI in a sequence which is defined by the way in which the elements were registered, made visible, audible or available, or by the inherent nature of the elements.

**25 Claims, 11 Drawing Sheets**